

## REMARKS

Claims 1 - 4 and 9 - 13 remain active in this application. New claims 14 and 15 have been added to more fully claim the subject matter regarded as the invention. Claims 5 - 8 have previously been canceled. Support for new claims 14 and 15 is found in figure 9A and the description thereof on pages 4 - 6. No new matter has been introduced into the application.

The interview graciously granted by Examiner Brooke to the under signed on December 18, 2003, is acknowledged with appreciation. At the interview, the Shortened Statutory Period for response and the proposed amendments to the drawings were discussed in addition to the independent claims and the applied prior art and the apparent reliance on Hashizume et al. in the present action. The substance of the interview will be summarized in the discussion of each of these issues below.

Before addressing the content of the office action, it is noted, for the record, that the office action of August 20, 2003, was erroneously made final. Upon receipt, a call was placed to the Examiner by Michael E. Whitham of this firm to point out this error. The Examiner agreed that the finality of the action was procedurally erroneous and indicated that a corrected action would be forthcoming. On September 10, 2003, a communication was mailed acknowledging the error and indicating that the action of August 20, 2003, should be treated as a non-final action; thus modifying that action. The communication was silent as to the Shortened Statutory Period for response. However, at the above-noted interview, the Examiner informed the undersigned that the Shortened Statutory Period for response had not, in fact, been reset.

Nevertheless, since the action was modified as to its finality and the procedural error acknowledged, it

is respectfully submitted that the period for response should be deemed to have been reset to expire December 10, 2003, rather than November 20, 2003. Further, in this regard, as pointed out to the Examiner at the above-noted interview, the communication was mailed to an incorrect address through error not attributable to Applicant and, in fact, only reached the offices of the undersigned on September 30, 2003. Therefore, it is respectfully submitted that Applicant is entitled to have the action *again* re-mailed and the Shortened Statutory Period for response reset to avoid undue prejudice to Applicant and, to the extent necessary for this paper to be accepted as being timely filed and to avoid a need for the above petition for extension of time for response and fee therefor, such re-mailing of the action is respectfully requested.

The Examiner has objected to the previously submitted proposed correction of the drawings since it was proposed to label Figures 9A - 9C as Related Art rather than Prior Art. This objection is respectfully traversed. It is well-established that the Examiner must consider everything the Applicant has said about the prior art in order to determine the scope of any admission. See *In re Nomiya*, 184 USPQ 607 (CCPA, 1975). The Brief Description of the Drawings in the present application (page 11) states:

"Figures 9A, 9B and 9C are *conceptual* views for explaining the inkjet recording head *of the present invention* and the conventional inkjet recording head."

(emphasis added).

Therefore, it is respectfully submitted that there is no basis for requiring the Applicant to make an admission contrary to the facts of the matter and which might be considered or construed extend to some features or principles of the present invention. Accordingly, it is respectfully submitted that this

objection is clearly without basis and in error and reconsideration and withdrawal of the same is respectfully requested. This requirement and the above remarks were presented at the above-referenced interview with the Examiner and it is the understanding of the undersigned that the Examiner was persuaded to accept the previously submitted proposed revision of the drawings and that this objection will be withdrawn.

Claims 1, 3, 9, 11 and 13 have been rejected under 35 U.S.C. §103 as being unpatentable over the admitted prior art in view of Kitahiro and claims 2, 4, 10 and 12 have been rejected under 35 U.S.C. §103 as being unpatentable over the admitted prior art in view of Kitahiro and Gaynes et al. These grounds of rejection are respectfully traversed since, *inter alia*, 1.) the Examiner has clearly erred in determination of the scope of the admitted prior art as is evident from the above discussion of the objection to proposed drawing revisions; 2.) the statement of the rejection and the response to remarks previously presented do not address the amendatory language submitted in the amendment filed July 21, 2003, 3.) neither Kitahiro nor Gaynes et al. supplements the prior art in a manner to answer the recitations of the claims or provides evidence of a level of ordinary skill in the art which would support the conclusion of obviousness that the Examiner has asserted since, taken singly or together they do not lead to an expectation of success in achieving the meritorious effect of the present invention and, in fact, are improperly combined under the precedent of *In re Gordon*, 221 USPQ 1125 (Fed. Circ., 1984) and 4.) the statement of the rejection relies on further prior art not explicitly applied which also fails to answer the recitations of the claims or provide motivation for the applied combination or evidence of a level of ordinary skill in the art which would support a conclusion of obviousness. Any or all of these defects in the

statement of the rejections preclude a *prima facie* demonstration of obviousness being made as to any claim in the application.

The present invention addresses the problem of the admitted prior art inkjet recording heads in which extended arrays of inkjet apertures and ink passages tended to weaken the relatively thin substrate(s) through which ink passages extend; causing, or at least increasing the likelihood of cracking of the print head substrate(s) in use due to heat, stress and the like, particularly during manufacture; decreasing manufacturing yield. See page 6, lines 3+. The admitted prior art extends only to the fact that the substrate(s) of known print heads are desirably thin but must have a thickness sufficient to contain the ink passages and inkjets. The attribution of cracking to the array and density of such inkjets and ink passages is not admitted to be prior art nor is the solution of providing a metal reinforcement which prevents nucleation and propagation of cracks.

As previously pointed out, the substrate reinforcement of Kitahiro is intended and applied in a manner to *prevent curling of the substrate* when it is made *sufficiently thin to be flexible* consistent with use in a "smart card" to be carried in a wallet or the like and handled roughly including bending during assembly of the card. The thickness of the substrate of Kitahiro must therefore be sufficiently small to be flexible and thus far too thin to support the formation of ink passages therein and does not contemplate inclusion of apertures in an array which would tend to concentrate forces to aggravate cracking when stress and/or heat is applied to the substrate. In fact, damage in Kitahiro is attributed to the cleavage plane of the thin, monocrystalline substrate (which exists over a continuum of locations) and the reinforcement is provided in Kitahiro by any of a wide variety of

materials having a different crystalline structure such as random crystal grain orientations in polycrystalline silicon or metal which is preferably five to ten times as strong as the thin monocrystalline chip which can then be made even thinner (see paragraph bridging pages 4 and 5 of the translation) while the reinforcement of the present invention must, on the contrary, be limited in thickness to avoid affecting the remaining geometry of the print head to the extent possible and to avoid introducing stresses which could cause damage (see pages 22 - 23 of the present specification). Further, it is apparent from the explicit statement at page 3, third full paragraph of the translation relied upon that any cracking in the very thin substrate of Kitahiro is due to resisting the tendency of the thin substrate to curl during later application of a reinforcing plate or due to assembly with a card which must be bent or due to the curling tendency, itself.

Therefore, the teachings of Kitahiro are limited to the application of a reinforcing plate prior to grinding or otherwise reducing the substrate to a final desired thickness having a sufficient degree of flexibility for reliable use in a "smart card", even with the reinforcement in place; a flexibility completely inappropriate to a print head in which a specific geometry must be accurately maintained. Conversely, the substrate(s) of the admitted prior art, having a thickness sufficient to include and including ink passages are far too thick to spontaneously curl or to have suitable flexibility for the "smart card" application of Kitahiro. Therefore, modification of the admitted prior art in accordance with Kitahiro and, conversely, the modification of Kitahiro in accordance with the admitted prior art are both improper since such modifications would preclude both types of devices from functioning in the manner intended and the combination is thus clearly improper under In re

Gordon, *supra*, quite apart from the question of non-analogousness of Kitahiro to the admitted prior art or the present invention (which Applicant respectfully maintains to be clear).

In this latter regard, it is respectfully submitted that the amendatory language presented in the amendment of July 21, 2003, was intended to emphasize the non-analogous character of the teachings and suggestions of Kitahiro by reciting *both* the necessary thickness of a print head substrate to accommodate ink passages therein and, further, the geometry thereof which localizes and concentrates stresses at the location of those passages (as opposed to a cleavage plane which exists throughout a monocrystalline structure) which tends to nucleate the cracking under stress and/or heat; which cracking is avoided by the present invention, particularly during manufacture of the print head. Therefore, contrary to the Examiner's assertion, the teachings of Kitahiro are not, in fact, in the field of Applicant's endeavor or reasonably pertinent to the *particular* problem with which the Applicant is concerned. The Examiner merely states the problem broadly: "to increase the strength of a semiconductor device" rather than considering even the general field of print heads and the widely divergent requirements for and environment of "smart cards" or the problem of cracking due to *structural discontinuities* represented by ink passages which are unavoidable in that field of endeavor. In so doing, the Examiner has evidently failed to consider the amendatory language in this regard or, at best, to have tacitly dismissed it (without comment) since the thickness of the substrate(s) and the array of passages is present in the prior art and, in fact, the *source* of the problem addressed by the invention, and without consideration of the inconsistency and non-analogousness of the teachings or suggestions of

Kitahiro thereto or, by the same token, the impropriety of the combination even if *Kitahiro is considered to be analogous art*, as discussed above.

In summary and as discussed with the Examiner at the above-noted interview, Kitahiro is directed to reduction of the substrate thickness sufficiently to engender flexibility sufficient for inclusion of the substrate in a smart card. The Examiner further asserts in the present office action that it would be obvious to apply the teachings of Kitahiro to a print head in view of the desirability of reducing thickness of the print head. However, in a print head having the array of ink passages claimed for distribution of ink in a reliable and well-regulated manner, reduction of print head body thickness is clearly not desirable or, as a practical matter, possible. On the contrary, the dimensions of the ink passages must be maintained at a relatively large size to avoid increasing resistance to ink flow (see page 5, lines 13 - 21, which indicates that relatively large dimensions of passages are "required" in a print head of the claimed type for that reason). In this regard, the Examiner's reference to Hashizume et al. for the suggestion of desirability of reducing or scaling the print head body thickness to smaller dimensions is particularly inappropriate to that purpose since, while Hashizume et al. discusses an inkjet print head, it is not of a type having the claimed ink distribution passages.

Moreover, neither Kitahiro nor Gaynes et al. supplements the prior art in a manner to answer the recitations of the claims for the reasons discussed in previous responses which are hereby fully incorporated herein by reference. In summary, both Kitahiro and Gaynes et al. function in a manner very different from the present invention: Kitahiro by providing an element many times as strong as the substrate and having a microstructure which does not coincide with the

continuum of cleavage planes of the chip while the chip is reduced in thickness to engender flexibility and to counteract a tendency of the substrate to curl and where cleavage planes may extend through the substrate although the substrate is not otherwise weakened at such a thickness (whereas flexibility is clearly not desirable in a print head body and stresses may be concentrated by the ink passages to unavoidably further weaken the chip) and Gaynes et al. functioning by providing prestressing of the structure to oppose the anticipated forces after the chip is placed in service (whereas the invention limits thickness of the reinforcement to limit transfer of stress from the reinforcement to the chip and is directed principally to avoiding reduction of manufacturing yield). Further, neither Kitahiro nor Gaynes et al. taken singly or together can provide evidence of a level of ordinary skill in the art which would support a conclusion of obviousness of the claimed subject matter since they are not properly combinable with the admitted prior art (the scope of which has not been properly determined) and, even if properly combinable, do not lead to an expectation of success in providing the meritorious function of the present invention (e.g. an unexpected increase in manufacturing yield) in the manner claimed.

Finally, in the response to previously presented arguments, the Examiner improperly buttresses the rejection by reference to Hashizume et al., apparently for teaching or suggesting scaling of various components of a print head. Such reference places reliance on teachings not included in the statement of the rejection and facts not properly in evidence and is clearly improper for that reason as well as indicating, on the record, the insufficiency and impropriety of the stated grounds of rejection. Substantively, even if such scaling were properly cited and applied, it would

not teach or suggest a thickness of the print head being reduced to a point where it was other than rigid and which would imply and require a thickness less than that necessary to include ink passages as now claimed for the simple reason that Hashizume et al. does not include recited ink passages and is non-analogous to the print head body structure claimed; recitations effectively ignored by the Examiner, as discussed above.

In this regard, it is again respectfully brought to the Examiner's attention, as noted at the interview, that by reducing thickness of the substrate as in Kitahiro, it is actually made more compliant to applied external forces while the print head body of the invention does not involve reduction of wafer thickness (particularly to the degree of Kitahiro) and is substantially inflexible (as now claimed in new claims 14 and 15. It is the desirable inflexibility of the chip in the present invention which, in combination with the removal of material in an array pattern to form the ink passages, as claimed, which causes further weakening of the chip for which the invention compensates; a circumstance and problem not presented or addressed by Kitahiro. Therefore, it is clearly seen that the grounds of rejection stated in the present office action are grounded in hindsight, as well.

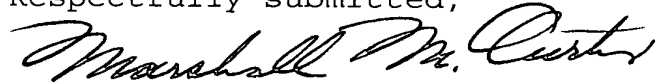
Accordingly, the Examiner has failed to make a *prima facie* demonstration of obviousness of any claim in the application for at least the four major reasons discussed above and the stated grounds of rejection are clearly in error for each and every one of those reasons. The Examiner has not, in fact, substantively answered previously submitted remarks and has not met the standards enunciated in the authorities cited in support of the Examiner's position and reiterated in the action. Therefore, it is again respectfully

submitted that the stated grounds of rejection are untenable and, upon reconsideration, withdrawal thereof is respectfully requested.

Since all rejections, objections and requirements contained in the outstanding official action have been fully answered and shown to be in error and/or inapplicable to the present claims, it is respectfully submitted that reconsideration is now in order under the provisions of 37 C.F.R. §1.111(b) and such reconsideration is respectfully requested. Upon reconsideration, it is also respectfully submitted that this application is in condition for allowance and such action is therefore respectfully requested.

A petition for a one-month extension of time has been made above. If any further extension of time is required for this response to be considered as being timely filed, notwithstanding the procedural irregularity discussed above and the relief requested, a conditional petition is hereby made for such extension of time. However, as discussed above, it is clear that the Shortened Statutory Period for response should be reset and no extension of time for response should be necessary and refund of the petition fee is respectfully submitted to be in order. Please charge any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041 (Whitham, Curtis & Christofferson).

Respectfully submitted,



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